Devrim Kilinc

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Risk Factors and Molecular Determinants of Aging-Related Diseases
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Education

09/2020 HDR, Neuroscience, Université de Lille, Lille, France
03/2008 Ph.D., Biomedical Engineering, Drexel University, Philadelphia, PA
06/2003 M.S., Biomedical Engineering, Bogazici University, Istanbul, Turkey
06/2001 B.S., Mechanical Engineering (ABET accredited), Bogazici University, Istanbul, Turkey

Employment

06/2019 – Present Research Scientist (Chargé de Recherche); Institut Pasteur de Lille – Inserm U1167, Lille, France
06/2016 – 06/2019 Postdoc (PI: Jean-Charles Lambert); Institut Pasteur de Lille – Inserm U1167, Lille, France
09/2013 – 03/2016 Research Fellow (PI: Gil U. Lee); UCD Nanomedicine Centre, University College Dublin, Dublin, Ireland
09/2011 – 09/2013 Marie Curie Intra-European Fellow (PI: Gil U. Lee); Bionanosciences Laboratory, UCD, Dublin, Ireland
03/2010 – 09/2011 Postdoc (PI: Gil U. Lee); Bionanosciences Laboratory, UCD, Dublin, Ireland
03/2008 – 12/2009 Postdoc (PI: Bernard Brugg and Jean-Michel Peyrin); CNRS UMR 7102, Université Pierre et Marie Curie, Paris, France
10/2003 – 03/2008 Research and Teaching Assistant; Cellular Mechanics Laboratory, Drexel University, Philadelphia, PA

Research Funding

FVA-BFF Cross-border grant 2025 (€102K out of €200K; 2 years); co-PI (with B Goult); APP-mediated mechanical signaling and its regulation by Alzheimer's risk genes
ANR PRC 2025 (€252.5K out of €733.7K; 3 years); co-PI (with M Gomes-Pereria and F Treussart); RNA metabolism in axonal biology and vesicle transport: insights from myotonic dystrophy type 1 (RAVEN)
ANR PRME 2025 (PI: JC Lambert); team member; Adhesion pathways and Alzheimer's disease: Towards a genetically dependent synaptic failure (AD-AP)
CNPq (Brasil) Chamada 33/2024 grant (€5.5K out of €320K; 3 years; PI: VT Ribas, UFMG, Brasil); collaborator; rAAV biopharmaceutical for neuroprotective and regenerative gene therapy against neurodegenerative disorders
Fondation pour la Recherche Médicale 2024 PhD Thesis Fellowship for A Battrel; supervisor
Fondation Alzheimer 2024 End of PhD Thesis Fellowship for C Gelle; supervisor
ANR PRC 2023 (PIs: P Dourlen and L Buée); team member; Tau-oriented functional analysis of Alzheimer disease susceptibility genes (TauFunAlz)
IPL Transdisciplinary Research Projects 2022 grant (€50K out of €100K; 2 years); co-PI (with M Gissot); Deciphering the consequences of *Toxoplasma gondii* infection on neuron activity
Alzheimer's Association Research Grant 2022 ($150K; 3 years); PI; Microfluidic screening of Alzheimer's risk genes against Aβ synaptotoxicity
CPER-CTRL 2019 Collaborative Grant (€135K out of €200K; 2 years); co-PI (with S Halliez); Medium-throughput screening based on microfluidic neuron co-cultures that permit physiologically relevant synapse toxicity
Sanofi iAwards Europe 2019 Grant (€100K; 1 year); PI; Medium-throughput screening platform based on microfluidic neuron co-cultures that permit physiologically-relevant synapse toxicity
CoEN 2019 Pathfinder IV grant (£327K; 2 years; PIs: P Heutink and JC Lambert); co-applicant; Systematic investigation of genetic risk factors for neurodegenerative diseases in neuronal-microglia co-cultures using microfluidic devices
Fondation Vaincre Alzheimer 2017 Pilot Grant (€40K; 2 years); PI; Role of Pyk2/p53 pathway in synaptic failure due to localized Aβ treatment
Enterprise Ireland Commercial Case Feasibility Support Grant 2013 (€9.4K); PI; Lab on a chip system for the characterization of cellular response to orthogonal chemical gradients
Marie Curie Intra-European Fellowship 2011-2013 (€194.8K); fellow; Application of mechanical forces on axon growth cones via magnetic nanoparticles to enhance axon regeneration in central nervous system (MagForce4AxonGrowth)
AXA Research Fund Doctoral Fellowship for A Blasiak (€120K); supervisor
Microfabrication Project Grant; SFI National Access Programme; co-PI (with GU Lee)
Research Fellowships; Drexel Neuroengineering Major Research Initiative, 2007–2008; Drexel Synergy Grant, 2005–2006.

Book Chapters

Blasiak A*, **D Kilinc*** and JM Peyrin*. "Subcellular compartmentalization for neurobiology: Focusing on the axon," in Handbook of Neuroengineering (NV Thakor, ed), Nov 2021, DOI: 10.1007/978-981-15-2848-4_1-1 (* co-corresponding)
Lee GU, K Ivanov, **D Kilinc**, E Martines, A Blasiak, P Li and M Higgins. "Characterization of intermolecular and intramolecular interactions with the atomic force microscope," Handbook of Imaging in Biological Mechanics (C Neu and G Genin, editors), Oct 2014, 445-56

Preprint

Lannette-Weimann N, M Huyvaert, F Limoge, M Lemaire, V Gao, F Maurier, K Guyot, …, A Dannert, J González-Gallego, M Muntaner, B Grenier-Boley, J Chapuis, D Paquet, **D Kilinc**, JC Lambert and J Dumont. The Alzheimer's disease-associated rs28834970 variant in PTK2B impairs electrical activity and regulates Tau phosphorylation and APP processing in human neuronal cultures. *bioRxiv* 10.64898/2026.10.26.761842

Peer-Reviewed Journal Articles

Total number of citations: 1725; *H*-index: 24; average journal impact factor: 8.0 (WoS); ORCID 0000-0003-3321-5203

1. Coulon A, F Rabiller, M Takalo, A Roy, A Pelletier, H Martiskainen, D Siedlecki-Wullich, …, MR Costa, J TCW, E Glaab, AM Ayral, F Demiautte, B Grenier-Boley, M Muntaner, D Eberlé, S Deforges, JT Haas, **D Kilinc**, C Mulle, J Chapuis, M Hiltunen, J Dumont and JC Lambert. Non-microglial downregulation of PLCG2 impairs synaptic function and elicits Alzheimer disease-related hallmarks. *Nat Genet* 58:2164
2. Lambert E, C Gelle, V Leclerc, A Freire-Regatillo, L Liefooghe, N Barois, T Malfoi, X Hermant, F Demiautte, I Gallienne, F Lafont, P Amouyel, K Blary, S Kuenen, C Najdek, P Verstreken, D Siedlecki-Wullich, P Yger, JC Lambert, **D Kilinc*** and P Dourlen*. BIN1 gain-of-function in the presynaptic compartment leads to isoform-specific synaptotoxicity. *Alzheimers Res Ther*, 2026, 18:185 (* co-corr)
3. Siedlecki-Wullich D*, AM Ayral, L Iohan, C Lemeu, V Buiche, K Blary, J Chapuis, F Eysert, D Beury, M Delacre, D Hot, T Masuda, KP Knobeloch, M Prinz, JC Lambert† and **D Kilinc†***. Inflammation-enhanced synapse-specific phagocytosis by adult APP microglia in a microfluidic neuron–microglia co-culture model. *J Neuroinflammation*, 2026, 23:75 († co-last; * co-corr)

4. Dourlen P*, **D Kilinc***, I Landrieu, J Chapuis and JC Lambert. "BIN1 and Alzheimer's disease: The tau connection. *Trends Neurosci*, 2025, 48:349 (* co-first)
5. Najdek C, P Walle, A Flaig, AM Ayral, F Demiautte, A Coulon, V Buiche, Neuro-CEB Brain Bank, E Lambert, P Amouyel, C Gelle, D Siedlecki-Wullich, J Dumont, **D Kilinc**, F Eysert, JC Lambert, J Chapuis. "Calpain and caspase regulate Aβ peptides production via cleavage of KINDLIN2 encoded by the AD-associated gene FERMT2," *Neurobiol Aging*, 2025, 151:117
6. Buchholz S, MA Al Kabbani, M Bell-Simons, L Kluge, C Cakmak, J Klimek, N Haag, LC Iohan, A Coulon, MR Costa, **D Kilinc** and H Zempel. "The TAU isoform 1N4R confers vulnerability of MAPT knockout human iPSC-derived neurons to Amyloid beta and phosphorylated TAU-induced neuronal dysfunction," *Alzheimers Dement*, 2025, e14403
7. Ellis C, NL Ward, M Rice, NJ Ball, P Walle, C Najdek, **D Kilinc**, JC Lambert, J Chapuis and BT Goult. "The structure of an Amyloid Precursor Protein/talin complex indicates a mechanical basis of Alzheimer's Disease," *Open Biol*, 2024, 14:240185
8. Ropert B, S Bannwarth, EC Genin, L Vaillant-Beuchot, …, W Meira, N Bonnefoy, L Monassier, M Schiff, L Sago, **D Kilinc**, F Brau, V Redeker, D Bohl, D Tribouillard-Tanvier, V Procaccio, S Azoulay, JE Ricci, A Delahodde and V Paquis-Flucklinger. "Nifuroxazide rescues the deleterious effects due to CHCHD10-associated MICOS defects in disease models," *Brain*, 2024, awae348
9. Gomez-Murcia V, A Launay, K Carvalho, …, **D Kilinc**, D Siedlecki, M Besegher, S Bégard, B Thiroux, M Jung, O Nebie, M Wisztorski, N Déglon, C Montmasson, AP Bemelmans, M Hamdane, T Lebouvier, D Vieau, I Fournier, L Buee, S Lévi, LV Lopes, AL Boutillier, E Faivre and D Blum. "Neuronal A2A receptor exacerbates synapse loss and memory deficits in APP/PS1 mice," *Brain*, 2024, 147:2691
10. Saha O, AR Melo de Farias, A Pelletier, D Siedlecki-Wullich, B Soares Landeira, J Gadaut, A Carrier, AC Vreulx, K Guyot, Y Shen, A Bonnefond, P Amouyel, J TCW, **D Kilinc**, CM Queiroz, F Delahaye, JC Lambert and MR Costa, "The Alzheimer's disease risk gene BIN1 regulates activity-dependent gene expression in human-induced glutamatergic neurons," *Mol Psychiatry*, 2024, 29:2634
11. Lefebvre C, AC Vreulx, C Dumortier, S Bégard, C Gelle, D Siedlecki-Wullich, M Colin, **D Kilinc*** and S Halliez*, "Integration of microfluidic devices with microelectrode arrays to functionally assay amyloid-β-induced synaptotoxicity," *ACS Biomater Sci Eng*, 2024, 10:1856 (* co-corr)
12. Coulon A, D Siedlecki-Wullich, C Najdek, C Gelle, AM Ayral, F Demiautte, E Lambert, A Vandeputte, P Brodin, T Mendes, JC Lambert, **D Kilinc**, J Dumont and J Chapuis, "High-content screening of synaptic density modulators in primary neuronal cultures," *Curr Protoc Cell Biol*, 2023, 3:e904
13. Eysert F, A Coulon, E Boscher, …, M Hiltunen, F Chécler, M Farinelli, C Delay, N Malmanche, SS Hébert, J Dumont, **D Kilinc**, JC Lambert and J Chapuis, "Alzheimer's genetic risk factor FERMT2 (Kindlin-2) controls axonal growth and synaptic plasticity in an APP-dependent manner," *Mol Psychiatry*, 2021, 26:5592
14. **Kilinc D***, AC Vreulx, T Mendes, A Flaig, D Marques-Coelho, M Verschoore, F Demiautte, P Amouyel, Neuro-CEB Brain Bank, F Eysert, P Dourlen, J Chapuis, MR Costa, N Malmanche, F Checler and JC Lambert*, "Pyk2 overexpression in postsynaptic neurons blocks amyloid β_{1-42}-induced synaptotoxicity in a microfluidic co-culture model." *Brain Commun*, 2020, 2:fcaa139 (* co-corr)
15. Mendes T, A Herledan, F Leroux, B Déprez, JC Lambert, **D Kilinc**. "High-content screening using proximity ligation assay in primary neurons cultured in 384-well plates," *Curr Protoc Cell Biol*, 2019, 86:e100
16. Sartori M, T Mendes, S Desai, …, L Pradier, M Hiltunen, I Landrieu, **D Kilinc***, Y Herault*, J Laporte* and JC Lambert*. "BIN1 recovers tauopathy-induced long-term memory deficits in mice and interacts with Tau through Thr348 phosphorylation," *Acta Neuropathol*, 2019, 138:631 (* co-last)
17. Dourlen P, **D Kilinc**, N Malmanche, J Chapuis and JC Lambert. "The new genetic landscape of Alzheimer's disease: from amyloid cascade to genetically driven synaptic failure hypothesis?," *Acta Neuropathol*, 2019, 138:221
18. **Kilinc D**. "The emerging role of mechanics in synapse formation and plasticity," *Front Cell Neurosci*, 2018, 12:483
19. Lesniak A*, **D Kilinc***, A Blasiak, G Galea, JC Simpson and GU Lee. "Dynein-mediated axonal retrograde transport of nanoparticles in primary neurons depends on particle charge and lysosomal avoidance," *Small*, 2018, 1803758 (* co-first)
20. **Kilinc D***, A Blasiak, A Al-Adli, NC Carville, MA Baghban, RM Al-Shammari, JH Rice, GU Lee*, K Gallo* and BJ Rodriguez*. "Charge and topography patterned lithium niobate provides physical cues to fluidically isolated cortical axons," *Appl Phys Lett*, 2017, 110:053702 (* co-corresponding)
21. Blasiak A, **D Kilinc*** and GU Lee*. "Neuronal cell bodies remotely regulate axonal growth response to localized Netrin-1 treatment via second messenger and DCC dynamics," *Front Cell Neurosci*, 2017, 10:298 (* co-corresponding)
22. **Kilinc D**, CL Dennis and GU Lee. "Bio-nano-materials for localized mechanochemical stimulation of cell growth and death," *Adv Mater*, 2016, 28:5672-80
23. **Kilinc D**, J Schwab, S Rampini, OW Ikpekha, A Thampi, A Blasiak, P Li, R Schwamborn, W Kolch, D Matallanas and GU Lee. "A microfluidic dual gradient generator for conducting cell-based drug combination assays," *Integr Biol*, 2016, 8:39-49 (selected as 'hot paper' by reviewers)
24. Blasiak A, GU Lee* and **D Kilinc***. "Neuron sub-populations with different elongation rates and DCC dynamics exhibit distinct responses to isolated Netrin-1 treatment," *ACS Neuro*, 2015, 6:1578-90 (journal cover; * co-corresponding)
25. **Kilinc D**, A Blasiak and GU Lee. "Microtechnologies to study the role of mechanics in axon growth and guidance," *Front Cell Neurosci*, 2015, 9:282
26. Rampini S, **D Kilinc**, P Li, C Monteil, D Gandhi and GU Lee. "Micromagnet arrays for on-chip focusing, switching, and separation of superparamagnetic beads and single cells," *Lab Chip*, 2015, 15:3370-9
27. **Kilinc D**, A Blasiak, JJ O'Mahony and GU Lee. "Low piconewton towing of CNS axons against diffusing and surface-bound repellents requires the inhibition of motor protein-associated pathways," *Sci Rep*, 2014, 4:7128
28. **Kilinc D***, A Lesniak*, SA Rashdan, D Gandhi, A Blasiak, PC Fannin, A von Kriegsheim, W Kolch and GU Lee. "Mechanochemical stimulation of MCF7 cells with rod-shaped Fe-Au Janus particles induces cell death through paradoxical hyperactivation of ERK," *Adv Healthc Mater*, 2015, 4:395-404 (* co-first).
29. Lesniak A*, **D Kilinc***, SA Rashdan, A von Kriegsheim, B Ashall, D Zerulla, W Kolch and GU Lee. "*In vitro* study of the interaction of heregulin functionalized magnetic-optical nanorods with MCF7 and MDA-MB-231 cells," *Farad Discuss*, 2014, 175:189-201 (* co-first).
30. **Kilinc D** and GU Lee. "Advances in magnetic tweezers for single molecule and cell biophysics," *Integr Biol*, 2014, 6:27-34 (one of top ten most accessed *Integr Biol* articles in 2014; also selected as 'hot paper' by reviewers)
31. Stoeckli ET, **D Kilinc**, B Kunz, S Kunz, GU Lee, E Martines, C Rader and D Suter. "Analysis of cell-cell contact mediated by Ig superfamily cell adhesion molecules," *Curr Protoc Cell Biol*, 2013, 61:9.5.1-9.5.85
32. Magnifico S, L Saias, B Deleglise, **D Kilinc**, E Duplus, MC Miquel, JL Viovy, B Brugg and JM Peyrin. "NAD+ acts on mitochondrial SirT3 to prevent axonal caspase activation and axonal degeneration," *FASEB J*, 2013, 27:4712-22
33. Li P, **D Kilinc**, YF Ran and GU Lee. "Flow enhanced non-linear magnetophoretic separation of beads based on magnetic susceptibility," *Lab Chip*, 2013, 13:4400-8

34. O'Mahony JJ, M Platt, **D Kilinc** and GU Lee. "Synthesis of superparamagnetic particles with tunable morphologies: the role of nanoparticle-nanoparticle interactions," *Langmuir*, 2013, 29:2546-53
35. **Kilinc D**, A Blasiak, JJ O'Mahony, DM Suter and GU Lee. "Magnetic tweezers-based force clamp reveals mechanically distinct apCAM domain interactions," *Biophys J*, 2012, 103:1120-9
36. **Kilinc D**, JM Peyrin, V Soubeyre, S Magnifico, L Saias, JL Viovy and B Brugg. "Wallerian-like degeneration of central neurons after mass axotomy in a novel three-compartmental microfluidic chip," *Neurotox Res*, 2011, 19:149-61
37. **Kilinc D**, G Gallo and KA Barbee. "Mechanical membrane injury induces axonal beading through localized activation of calpain," *Exp Neurol*, 2009, 219:553-61
38. **Kilinc D**, G Gallo and KA Barbee. "An interactive image processing and analysis algorithm for the quantification of axonal beading," *Comput Meth Prog Bio*, 2009, 95:62-71
39. **Kilinc D**, G Gallo and KA Barbee. "Poloxamer 188 blocks mechanoporation-induced axonal beading and cytoskeletal damage," *Exp Neurol*, 2008, 212:422-30

Peer-Reviewed Conference Proceedings

1. Peyrin JM, L Saias, P Gougis, S Magnifico, S Betuing, **D Kilinc**, JL Viovy and B Brugg, "Microfluidic chips with 'axon diodes' for directed axonal outgrowth and reconstruction of complex live neural networks," Proceedings of µTAS 2008, pp. 1329-31, Oct 12-16, 2008, San Diego, CA
2. Sasoglu FM, **D Kilinc**, K Allen, and B Layton, "Parallel force measurements in cell arrays," Proceedings of the ASME IMECE, pp. 855-9, November 11-15, 2007, Seattle, WA
3. **Kilinc D**, G Gallo, and KA Barbee, "Poloxamer 188 reduces axonal beading following mechanical trauma to cultured neurons," Proceedings of EMBC 2007, pp. 5395-8, Aug 23-26, 2007, Lyon, France
4. Sasoglu FM, **D Kilinc**, K Allen, and B Layton, "Towards a method for printing a network of chick forebrain neurons for biosensor applications," Proceedings of EMBC 2007, pp. 4092-5, Aug 23-26, 2007, Lyon, France
5. **Kilinc D**, G Gallo, and KA Barbee, "Effects of shear stress injury on the morphology and structure of cultured chick forebrain neurons," Proceedings of the BIYOMUT 2005, pp. 191-6, May 25-26, 2005, Istanbul, Turkey

Patents

Kilinc D, P Li, GU Lee, D Gandhi and S Rampini S, "Optical detection based on non-linear magnetophoretic transport of magnetic particle for particle and biological sensing and separation," US patent 11,273,454; dated Mar 15, 2022

Kilinc D, S Rampini, R Schwamborn, W Kolch and GU Lee, "A microfluidic device for cell culture observation and manipulation," WO/2015/032900; filed Sep, 5, 2014

Selected Oral Presentations

Axonal and dendritic transport in the context of Alzheimer's disease, MTTN 2023, Institut Curie – Orsay, France, Nov 16, 2023

Low piconewton towing of CNS axons against diffusing and surface-bound repellents requires the inhibition of motor protein-associated pathways, 622. Heraeus Seminar: Neuronal Mechanics, Bad Honnef, Germany, Aug 17-19, 2016

Microfluidic neuron culture devices to study neural development and disease, Nencki Institute of Exp. Biology, Warsaw, Poland, Apr 21, 2016

Molecular targeting and localized mechanochemical stimulation of ErbB receptors with Fe-Au nanorods, BMES Annual Meeting, San Antonio, TX, Oct 22-25, 2014

Parallel magnetic tweezers for pulling CNS axons towards a source of repellent factors, BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013

Morphological response of cultured chick forebrain neurons to mechanical injury, BMES Annual Meeting, Philadelphia, PA, Oct 13-16, 2004

Advanced Research Training

'GdR ImaBio Practical Course: Molecular Dynamics Measurements in Cells', Laboratoire PhLAM, Lille, France, Oct 8-11, 2019
'EMBO Workshop: Molecular Neurobiology', Crete, Greece, May 8-12, 2018
'EMBO Practical Course: Microscopy, Modelling and Biophysical Methods', EMBL Heidelberg, Germany, Sep 8-20, 2014
'Computational methods for spatially realistic microphysiological simulations (MCELL) workshop', Pittsburgh, PA, June 25-29, 2007
'Eighth Annual Virtual Cell Short Course', Farmington, CT, June 11-13, 2007
'IEEE-EMBS/ASME Workshop on Nanoscale Modeling and Meas. of Mecha. Prop. of Cells and Proteins', Philadelphia, PA, Sep 14-16, 2006
'Virtual Institute Summer Session', Greater Philadelphia Bioinformatics Alliance, Philadelphia, PA, Jun 26-Aug 11, 2006

Academic Service

Peer reviewer for (among others) *Nat Commun, Adv Healthc Mater, PNAS, Small, BMC Neurosci, Biomaterials, ACS Chem Neurosci, Cell Mol Neurobiol, Neurosignals, Sci Rep, Sensors, Front Mol Neurosci, Front Cell Neurosci, Transl Neurodegener, J Vis Exp, Rev Neuroscience, Springer Handbook of Neuroengineering, Curr Protoc Cell Biol, Micromachines, Pharmacol Rep, Biomedicines, Semin Cell Dev Biol, J Nanobiotechnology*

Grant reviewer for *Agence Nationale de la Recherche (FR)*, *UKRI Future Leaders Fellowships; UKRI Med. Res. Coun., Latvian Coun. of Sci., CaixaImpulse Innovation Call (ES), Alzheimer's Association (USA), Muenster Univ. Medical School (DE), NCSTE (KZ)*, *National Sci. Centre (PL)*

Monitor and proposal reviewer for the *FET Open* (Horizon 2020) and proposal reviewer for the *EIC Pathfinder* (Horizon Europe) programs

Teaching Experience

Lecturer, "Introduction to cell mechanics and mechanotransduction," Life Sciences & Technologies MS program, Univ. Lille, (2021–Present)

Lecturer, LiCEND Summer School: "Experimental models for neurodegenerative diseases: from cells to model organisms," Lille Center of Excellence for Neurodegenerative Diseases, Loos, France, July 2-5, 2019

Co-organizer, "Quantifying synaptic plasticity in primary neurons using microfluidic culture devices and a custom image analysis workflow," Functional Microscopy for Biology (MiFoBio) School, Seignosses, France, Oct 5-12, 2018

Guest lecturer, optical and magnetic tweezers; 'Nanomechanics' course, UCD School of Physics (2010–2015)

Teaching assistant, 'Biomeasurements' and 'Biomechanics' lab classes, Drexel University (2006–2007)

Mentoring Experience

Supervised or co-supervised 7 interns, 2 4th year students, 10 MS and 6 PhD students, 5 technicians/engineers and7 postdoctoral fellows.